

# THE GENUS *CYBIANTHUS* SUBGENUS *CONOMORPHA* (MYRSINACEAE) IN GUAYANA<sup>1</sup>

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## ABSTRACT

A taxonomic treatment of the species in *Cybianthus* subg. *Conomorpha* occurring in the Guayana Floristic Province is presented. Twenty-one species are described and illustrated, and their phylogenetic relationships are discussed. The distribution and ecology of each species are provided. A key to the subgenera of *Cybianthus* occurring in Guayana is presented, as is a key to the species within subgenus *Conomorpha*. Of the 21 species described, seven are new to science, one is transferred from subgenus *Weigeltia*, and one is transferred from subgenus *Cybianthus*. The new taxa include: *Cybianthus fabiolae*, *C. huberi*, *C. julianii*, *C. plowmanii*, *C. wurdackii*, *C. holstii*, and *C. maguirei*. The species concept of *Cybianthus guyanensis* is amplified to include *C. multipunctatus* as a subspecies, and the new combination, *C. guyanensis* subsp. *multipunctatus*, is made. Five additional binomials are lectotypified.

## RESUMEN

Se presenta un tratamiento taxonómico de las especies del género *Cybianthus* subgénero *Conomorpha* procedentes de la Provincia Florística Guayanesa. Se describen y se ilustran veintiún especies y se discuten su parentesco, distribución geográfica y ecología. Se presenta una clave para los subgéneros de *Cybianthus* de la Guayana, y una para las especies dentro del subgénero *Conomorpha*. De las veintiún especies descritas, siete son nuevas para la ciencia, una se transfiere del subgénero *Weigeltia*, y otra se transfiere del subgénero *Cybianthus*. Los nuevos taxa incluyen: *Cybianthus fabiolae*, *C. huberi*, *C. julianii*, *C. plowmanii*, *C. wurdackii*, *C. holstii*, y *C. maguirei*. El concepto de *Cybianthus guyanensis* se amplifica para incluir a *C. multipunctatus* como subespecie, y la nueva combinación, *C. guyanensis* subsp. *multipunctatus*, se publica. Cinco binomiales adicionales son lectotipificados.

*Cybianthus* Martius is the second largest genus of Myrsinaceae in the Neotropics, after *Ardisia* Swartz, the latter containing nearly 200 species. As here interpreted, *Cybianthus* contains 150 species in 10 subgenera. During the course of my work on the genus, it became apparent that an integral part of any *Flora Neotropica* monograph

would involve detailed study of the Guayanan species, particularly those of *Cybianthus* subg. *Conomorpha* (A. DC.) Agostini. The subgenus had been revised by Agostini (1971) in his dissertation, but in 1978 he gave me his file on the genus and suggested I pursue a monograph.

While revising subgenus *Conomorpha*, I dis-

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covered my concept of phylogenetic relationships within the subgenus and among the subgenera differed substantially from that of Agostini (Pipoly, 1987). The specimens collected by Steyermark, Huber, Holst, and the various collectors who participated in the Cerro de la Neblina expeditions provided material and ecological data that nearly doubled the amount of information available to Agostini. Fieldwork allowed me to observe sympatry, separation of species by abrupt changes in life zone, and sexual lability (dioecy and various combinations of polygamy in the same population), which had caused taxonomic confusion when studied only in the herbarium. Were it not for the wealth of new collections and field studies of populations, the reliance on relative lengths of the free portions of the filaments to separate many species by Agostini (1971) could not have been replaced by more practical characters, and phylogenetic analysis would have been precluded.

The present treatment is a precursor to my contribution to the *Flora of the Venezuelan Guayana*. Because the abbreviated format of the *Flora* does not allow discussions of ecology, morphology, and the description of novelties outside the territorial limits established therein, it became necessary to present a more comprehensive treatment prior to its publication.

#### MORPHOLOGY

In this treatment, morphological terms follow Lindley (1848) and Pipoly (1987).

#### HABIT AND ARCHITECTURE

All species of *Cybianthus* subg. *Conomorpha* are terrestrial shrubs or trees to 5 m tall with positively geotropic roots. All species of the subgenus except *C. fabiolae* exhibit Rauh's Model (Hallé et al., 1978), which is characterized by a monopodial, rhythmically growing, readily distinguishable trunk, which develops tiers of branches morphogenetically identical to itself. All branches are orthotropic and monopodial, with lateral (axillary) inflorescences that do not affect shoot development. As in most tropical trees exhibiting Rauh's Model, branching in members of subgenus *Conomorpha* is exclusively sylleptic. The sylleptic branches are easily recognized by the absence of basal bud-scales and the elongate hypopodium (an elongate portion of the stem below the prophylls). In subgenus *Conomorpha*, all species have sylleptic branches (sensu Hallé et al., 1978) that possess two ephemeral prophylls on the hypopodium, ex-

cept *C. apiculatus*, in which they are persistent, leaflike, and petiolate. It is the only species in the genus known thus far with persistent prophylls.

While I had earlier (Pipoly, 1987) doubted the possibility of finding Aubréville's Model (Hallé et al., 1978) within the genus, I observed it in the field in *Cybianthus fabiolae* Pipoly. Aubréville's Model is characterized by a monopodial, rhythmically growing trunk with tiers of branches morphogenetically distinct from it. The branches grow rhythmically, but are modular, developing as complexes that are plagiotropic and sympodial by apposition. In these complexes, the terminal meristem is displaced by an axillary one, but continues its growth in a rhythmic manner, producing extremely short internodes, thus remaining as a "short shoot." The sylleptic branch axis is at first oriented obliquely upward, but is progressively displaced downward, eventually in a plane perpendicular to the axis. Inflorescence production is lateral and occurs only in the axils of recently developed leaves of the short shoot. The inflorescence is sylleptically produced, senescent after fruit fall, and does not influence leaf or shoot production. The architectural dynamics of this model result in the characteristic "Terminalia branching" first described by Fisher (1977), with the exception that the progressive downward bending of branches was not observed. Whether this notable exception to modular dynamics is attributable to the small branch size and insignificant fruit weight in *C. fabiolae*, or some other morphogenetic or environmental factor, is unknown.

Unlike previous architectural studies in the genus (Pipoly, 1987), the present study did not reveal a direct correlation between sexual lability and architectural reiteration. It seems possible that this phenomenon might occur in *C. quelchii*, based on polygamy observed in some collections (e.g., Tillett et al. 45609), but it has not been observed in the field. Bayonet reiteration (Hallé et al., 1978), caused by destruction of the apical meristem of the trunk, was seen in *C. quelchii* on Serra Aracá, but the individual was not in flower, precluding study of consequential effects on sexual expression. In populations of *C. fabiolae* studied on Mt. Ayanganna, riverine reiteration (sensu Hallé et al., 1978), presumably produced by stress as a result of overshadowing by other trees, resulted in the production of an orthotropic shoot in the distal portion of an otherwise plagiotropic branch. Because the reiterative shoot was not in flower, the only concrete variation was the notable elongation of internodes and saplinglike leaf morphology. Further study of these populations is necessary to establish whether